UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/898,364	07/03/2001	Andrew John Schofield	GB920000099US1	1081

7590 06/30/2004	**EXAMINER**
Jerry W. Herndon	FLEURANTIN, JEAN B
IBM Corporation T81/503	

ART UNIT	PAPER NUMBER
2172	

PO Box 12195
Research Triangle Park, NC 27709

DATE MAILED: 06/30/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 10/03)

	Application No.	Applicant(s)
Office Action Summary	09/898,364	SCHOFIELD, ANDREW JOHN
	Examiner	Art Unit
	Jean B Fleurantin	2172

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) FROM
THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed
  after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any
  earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on <u>06 April 2004</u>.

2a)☒ This action is **FINAL**.   2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is
closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) <u>1-8</u> is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) <u>1-8</u> is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All b)☐ Some * c)☐ None of:

      1.☐ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage
application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☐ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.

4)☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ .

5)☐ Notice of Informal Patent Application (PTO-152)

6)☐ Other: _____.

DETAILED ACTION

Response to Amendment

1.   Claims 1-8 remain pending for examination.

Drawings

2.   Examiner approves the proposed correction to the drawing (FIGURE 1).

3.   The Association Power of Attorney (paper No. 6) filed on 1/14/04, has been entered.

4.   The Title of the Invention has been deleted from the Abstract. Thus, the objection to the Abstract of the Disclosure is now withdrawn.

Response to Arguments

5.   Applicant's arguments filed 6 April 2004 with respect to claims 1-8 have been fully considered but they are not persuasive because of the following reasons:

In response to applicant's argument on pages 7, that "None of the features of Claim 1 are taught or suggested by Mohan." Page 8-12, that "Mohan does not teach or suggest establishing identical partial pages I and I+1 at the earliest opportunity,

in response to a data segment D larger than the remaining space of a most recent updated partial page I, partitioning D into a first segment D1 sufficient to fill the remaining space of page I and a second data segment D2,

filling page I with a first write operation of its present contents concatenated with D1, and

creating identical partial pages I+1 and I+2 with a single, second write operation of D2 to both pages, whereby pages I+1 and I+2 become the new pages I and I+1 for the next logging operation" as recited in claim 1. It is respectively submitted that Mohan discloses the claimed limitations as follow: "a method for logging updates to a plurality of data records into discrete pages in nonvolatile storage" (see col. 1, lines 49-52), "wherein a page partially full of data is known as a partial page" as a means for recreating a page from said upon detection of either a partial sector write or a partial page write, (see col. 5, lines 19-21), said method comprising the steps of:

"establishing identical partial pages I and I+1 at the earliest opportunity" as a means for writing of page in first to the last sequence, (see col. 3, lines 43-45), and

"creating identical partial pages I+1 and I+2 with a single, second write operation of D2 to both pages, whereby pages I+1 and I+2 become the new pages I and I+1 for the next logging operation" as the state of the page can be related to the log records written for that page, in which the LSN of the log record identifying the most recent update to the page is stored in the page itself, (see col. 3, lines 61-65). Mohan does not explicitly disclose "in response to a data segment D larger than the remaining space of a most recent updated partial page I," "partitioning D into a first segment D1 sufficient to fill the remaining space of page I and a second data segment D2, filling page I with a first write operation of its present contents concatenated with D1," "filling page I with a first write operation of its present contents concatenated with D1." On the other hand, Mohan discloses "in response to a data segment D larger than the remaining space of a most recent updated partial page I" as the page had been partially written as where the page LSN sector extent had not been written to DASD, then the page LSN would be less than the

LSN of the particular log record for that page, (see col. 4, lines 26-30), "partitioning D into a first segment D1 sufficient to fill the remaining space of page I and a second data segment D2, filling page I with a first write operation of its present contents concatenated with D1" as a means for partitioning a page in the buffer into N sector such that each extent includes a status bit while the last extent also includes an N bit mirror byte of the status bits of all of N extents, (see col. 4, line 66 to col. 5, line 3), and "filling page I with a first write operation of its present contents concatenated with D1" as a means for recreating a page from said log upon detection of either a partial sector write or a partial page, (see col. 5, lines 16-18). It would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify the teachings of Mohan with "in response to a data segment D larger than the remaining space of a most recent updated partial page I," "partitioning D into a first segment D1 sufficient to fill the remaining space of page I and a second data segment D2, filling page I with a first write operation of its present contents concatenated with D1," "filling page I with a first write operation of its present contents concatenated with D1." Such modification would allow the teachings of Mohan to improve the accuracy and the reliability of the data logging method, apparatus, system and computer program, and to provide the list of the LSN of the latest log record written by each transaction, (see col. 7, lines 52-54).

In response to applicant's argument on pages 10 and 11, that Mohan does not explicitly disclose the claimed features of: "in response to a data segment D larger than the remaining space of a most recent updated partial page I, partitioning D into a first segment D1 sufficient to fill the remaining space of page I and a second data segment D2, filling page I with a first write operation of its present contents concatenated with D1, filling page I with a first write operation

of its present contents concatenated with D1", it must be recognized that any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the applicant's disclosure, such a reconstruction is proper. See *In re McLaughlin*, 443 F.2d 1392, 170 USPQ 209 (CCPA 1971).

> MPEP 2111 Claim Interpretation; Broadest Reasonable Interpretation

During patent examination, the pending claims must be "given the broadest reasonable interpretation consistent with the specification" Applicant always has the opportunity to amend the claims during prosecussion and broad interpretation by the examiner reduces the possibility that the claim, once issued, will be interpreted more broadly than is justified. In re Prater, 162 USPQ 541,550-51 (CCPA 1969). The court found that applicant was advocating ... the impermissible importation of subject matter from the specification into the claim. See also In re Morris, 127 F.3d 1048, 1054-55, 44 USPQ2d 1023, 1027-28 (Fed. Cir. 1997) (The court held that the PTO is not required, in the course of prosecution, to interpret claims in applications in the same manner as a court would interpret claims in an infringement suit. Rather, the "PTO applies to verbiage of the proposed claims the broadest reasonable meaning of the words in their ordinary usage as they would be understood by one of ordinary skill in the art, taking into account whatever enlightenment by way of definition or otherwise that may be afforded by the written description contained in application's specification.").

The broadest reasonable interpretation of the claims must also be consistent with the

interpretation that those skilled in the art would reach. In re Cortright, 165 F.3d 1353, 1359, 49

USPQ2d 1464, 1468 (Fed. Cir. 1999).

For the above reasons, the Examiner believes that the last Office Action was proper.

Claim Rejections - 35 U.S.C. § 103

6.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in
>
> section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are
>
> such that the subject matter as a whole would have been obvious at the time the invention was made to a person
>
> having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the
>
> manner in which the invention was made.

Claims 1- 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent

No. 5,418,940 issued to Mohan ("hereinafter Mohan").

As per claim 1, Mohan discloses "a method for logging updates to a plurality of data

records into discrete pages in nonvolatile storage" (see col. 1, lines 49-52), "wherein a page

partially full of data is known as a partial page" as a means for recreating a page from said upon

detection of either a partial sector write or a partial page write, (see col. 5, lines 19-21), said

method comprising the steps of:

"establishing identical partial pages I and I+1 at the earliest opportunity" as a means for

writing of page in first to the last sequence, (see col. 3, lines 43-45), and

"creating identical partial pages I+1 and I+2 with a single, second write operation of D2

to both pages, whereby pages I+1 and I+2 become the new pages I and I+1 for the next logging

operation" as the state of the page can be related to the log records written for that page, in which

the LSN of the log record identifying the most recent update to the page is stored in the page

itself, (see col. 3, lines 61-65). Mohan does not explicitly disclose "in response to a data

segment D larger than the remaining space of a most recent updated partial page I," "partitioning

D into a first segment D1 sufficient to fill the remaining space of page I and a second data

segment D2, filling page I with a first write operation of its present contents concatenated with

D1," "filling page I with a first write operation of its present contents concatenated with D1."

On the other hand, Mohan discloses "in response to a data segment D larger than the remaining

space of a most recent updated partial page I" as the page had been partially written as where the

page LSN sector extent had not been written to DASD, then the page LSN would be less than the

LSN of the particular log record for that page, (see col. 4, lines 26-30), "partitioning D into a first

segment D1 sufficient to fill the remaining space of page I and a second data segment D2, filling

page I with a first write operation of its present contents concatenated with D1" as a means for

partitioning a page in the buffer into N sector such that each extent includes a status bit while the

last extent also includes an N bit mirror byte of the status bits of all of N extents, (see col. 4, line

66 to col. 5, line 3), and "filling page I with a first write operation of its present contents

concatenated with D1" as a means for recreating a page from said log upon detection of either a

partial sector write or a partial page, (see col. 5, lines 16-18). It would have been obvious to a

person of ordinary skill in the art at the time the invention was made to modify the teachings of

Mohan with "in response to a data segment D larger than the remaining space of a most recent

updated partial page I," "partitioning D into a first segment D1 sufficient to fill the remaining

space of page I and a second data segment D2, filling page I with a first write operation of its

present contents concatenated with D1," "filling page I with a first write operation of its present

contents concatenated with D1." Such modification would allow the teachings of Mohan to

improve the accuracy and the reliability of the data logging method, apparatus, system and

computer program, and to provide the list of the LSN of the latest log record written by each

transaction, (see col. 7, lines 52-54).

As per claims 2 and 3, Mohan further discloses, "thereafter alternating this procedure

between pages I and I+1 until a data segment X fills the remaining space of the page containing

the most recent update, and at that point writing page I to the value of the most recent update

concatenated with the new segment X in a first write operation and writing any remaining part of

segment X into both pages I+1 and I+2 in a second write operation" as the state of the page can

be related to the log records written for that page, in which the LSN of the log record identifying

the most recent update to the page is stored in the page itself, (see col. 3, lines 61-65), and

column 5, lines 19-21. Mohan does not explicitly disclose in response to successive data

segments D, the first of which is smaller than the remaining space of the most recent updated

partial page I, writing page I+1 to the present contents of page I concatenated with D. On the

other hand, Mohan discloses the page in fact had been partially written as where the page LSN

sector extent had not been written to DASD then the page LSN would be less than the LSN of

the particular log record for that page, (see col. 4, lines 26-30). It would have been obvious to a

person of ordinary skill in the art at the time the invention was made to modify the teachings of

Mohan with in response to successive data segments D, the first of which is smaller than the

remaining space of the most recent updated partial page I, writing page I+1 to the present

contents of page I concatenated with D. Such modification would allow the teachings of Mohan

to improve the accuracy and the reliability of the data logging method, apparatus, system and

computer program.

As per claim 4, Mohan discloses "apparatus for logging updates to a plurality of data

records into discrete pages in non-volatile storage" (see col. 1, lines 49-52), "wherein a page

partially full of data is known as a partial page" as a means for recreating a page from said upon

detection of either a partial sector write or a partial page write, (see col. 5, lines 19-21),

comprising:

"means for establishing identical partial pages I and I+1 at the earliest opportunity" as a

means for writing of page in first to the last sequence, (see col. 3, lines 43-45), and

"means for updating with second write operation both pages I+1 and I+2 to D2, whereby

pages I+1 and I+2 become the new pages I and I+1 for the next logging operation" as the state of

the page can be related to the log records written for that page, in which the LSN of the log

record identifying the most recent update to the page is stored in the page itself, (see col. 3, lines

61-65). Mohan does not explicitly disclose "means responsive to a data segment D larger than

the remaining space of a most recent updated partial page I," "for partitioning D into a first

segment D1 sufficient to fill the remaining space of page I and a second data segment D2,"

"means for filling page I with a first write operation of its present contents concatenated with

D1." On the other hand, Mohan discloses "means responsive to a data segment D larger than the

remaining space of a most recent updated partial page I" as the page had been partially written as

where the page LSN sector extent had not been written to DASD, then the page LSN would be

less than the LSN of the particular log record for that page, (see col. 4, lines 26-30), "for

partitioning D into a first segment D1 sufficient to fill the remaining space of page I and a second

data segment D2," as a means for partitioning a page in the buffer into N sector such that each

extent includes a status bit while the last extent also includes an N bit mirror byte of the status

bits of all of N extents, (see col. 4, line 66 to col. 5, line 3), and "means for filling page I with a

first write operation of its present contents concatenated with D1" as a means for recreating a

page from said log upon detection of either a partial sector write or a partial page, (see col. 5,

lines 16-18). It would have been obvious to a person of ordinary skill in the art at the time the

invention was made to modify the teachings of Mohan with "means responsive to a data segment

D larger than the remaining space of a most recent updated partial page I," "for partitioning D

into a first segment D1 sufficient to fill the remaining space of page I and a second data segment

D2," "means for filling page I with a first write operation of its present contents concatenated

with D1". Such modification would allow the teachings of Mohan to improve the accuracy and

the reliability of the data logging method, apparatus, system and computer program, and to

provide the list of the LSN of the latest log record written by each transaction, (see col. 7, lines

52-54).

As per claim 5, Mohan further discloses, "means for thereafter alternating this procedure

between pages I and I+1 until a data segment X fills the remaining space of the page containing

the most recent update, and means for writing page I to the contents of the page containing the

most recent update concatenated with the last received data segment X" as the state of the page

can be related to the log records written for that page, in which the LSN of the log record

identifying the most recent update to the page is stored in the page itself, (see col. 3, lines 61-65),

and column 5, lines 19-21. Mohan does not explicitly disclose means response to successive

data segments D, the first of which is smaller than the remaining space of the most recent

updated partial page I for writing page I+1 to the present contents of page I concatenated with D.

On the other hand, Mohan discloses the page in fact had been partially written as where the page

LSN sector extent had not been written to DASD then the page LSN would be less than the LSN

of the particular log record for that page, (see col. 4, lines 26-30). It would have been obvious to

a person of ordinary skill in the art at the time the invention was made to modify the teachings of

Mohan with means response to successive data segments D, the first of which is smaller than the

remaining space of the most recent updated partial page I for writing page I+1 to the present

contents of page I concatenated with D. Such modification would allow the teachings of Mohan

to improve the accuracy and the reliability of the data logging method, apparatus, system and

computer program.

As per claim 6, Mohan further discloses "means for thereafter continuing this procedure

into successive pages I+2, I+3, etc. until a data segment X fills the remaining space of the page

containing the most recent update, and means for writing page I to the contents of the page

containing the most recent update concatenated with the last received data segment X" as the

state of the page can be related to the log records written for that page, in which the LSN of the

log record identifying the most recent update to the page is stored in the page itself, (see col. 3,

lines 61-65), and column 5, lines 19-21. Mohan does not explicitly disclose means response to

successive data segments D, the first of which is smaller than the remaining space of the most

recent updated partial page I for writing page I+1 to the present contents of page I concatenated

with D. On the other hand, Mohan discloses the page in fact had been partially written as where

the page LSN sector extent had not been written to DASD then the page LSN would be less than

the LSN of the particular log record for that page, (see col. 4, lines 26-30). It would have been

obvious to a person of ordinary skill in the art at the time the invention was made to modify the

teachings of Mohan with means response to successive data segments D, the first of which is

smaller than the remaining space of the most recent updated partial page I for writing page I+1 to

the present contents of page I concatenated with D. Such modification would allow the

teachings of Mohan to improve the accuracy and the reliability of the data logging method,

apparatus, system and computer program.

As per claims 7 and 8, the limitations of claims 7 and 8 are rejected in the analysis of

Claims 1 and 2, and these claims are rejected on that basis.

[Remainder of page intentionally left blank]

Conclusion

7.   **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time

policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE

MONTHS from the mailing date of this action. In the event a first reply is filed within TWO

MONTHS of the mailing date of this final action and the advisory action is not mailed until after

the end of the THREE-MONTH shortened statutory period, then the shortened statutory period

will expire on the date the advisory action is mailed, and any extension fee pursuant to 37

CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event,

however, will the statutory period for reply expire later than SIX MONTHS from the mailing

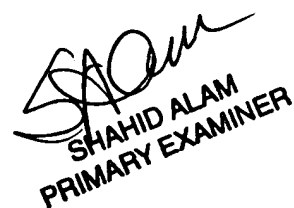date of this final action.

CONTACT INFORMATION

8.   Any inquiry concerning this communication or earlier communications from the

examiner should be directed to Jean B Fleurantin whose telephone number is 703-308-6718.

The examiner can normally be reached on 7:30-6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, John B Breene can be reached on 703-305-9790. The fax phone number for the

organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent

Application Information Retrieval (PAIR) system. Status information for published applications

may be obtained from either Private PAIR or Public PAIR. Status information for unpublished

applications is available through Private PAIR only. For more information about the PAIR

system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR

system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Jean Bolte Fleurantin

SHAHID ALAM
PRIMARY EXAMINER

April 23, 2004